NE96184601-0

OMB Number: 4040-0004
Expiration Date: 03/31/2012

Application for Federal Assistance SF-424

* 1. Type of Submission:	* 2. Type of Application:	* If Revision, select appropriate letter(s):
☐ Preapplication	☐ New	Revised for reduced budget
☐ Application	☐ Continuation	* Other (Specify)
☒ Changed/Corrected Application	☒ Revision	

* 3. Date Received:	4. Applicant Identifier:

5a. Federal Entity Identifier:	* 5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:	7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name:	Island Institute
* b. Employer/Taxpayer Identification Number (EIN/TIN):	* c. Organizational DUNS:
22-2786731	6223611110000

d. Address:

* Street1:	386 Main Street
Street2:	
* City:	Rockland
County:	
* State:	ME: Maine
Province:	
* Country:	USA: UNITED STATES
* Zip / Postal Code:	04841-0648

e. Organizational Unit:

Department Name:	Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:	
* First Name:	Ruth
Middle Name:	
* Last Name:	Kermish-Allen
Suffix:	

Cell 207 691 2504

Title:	Education
Organizational Affiliation:	Island Institute
* Telephone Number:	207.594.9209 Ext. 117
Fax Number:	207.594.9314
* Email:	rallen@islandinstitute.org

Application for Federal Assistance SF-424

9. Type of Applicant 1: Select Applicant Type:

M: Non -profit with 501c3 status (Other than institution of Higher Education)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Environmental Protection Agency

11. Catalog of Federal Domestic Assistance Number:

66.951

CFDA Title:

Environmental Education Grants

*** 12. Funding Opportunity Number:**

EPA-EE-13-01

* Title:

Envirnmental Education Model Grants -- Solicitation Notice for 2013

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

*** 15. Descriptive Title of Applicant's Project:**

Energy for US: A Model for Developing Inter-generational Community Action Teams

Attach supporting documents as specified in agency instructions.

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant ME-1 * b. Program/Project ME-1,2

Attach an additional list of Program/Project Congressional Districts if needed.

17. Proposed Project:

* a. Start Date: 7/1/2014 * b. End Date: 12/31/15

18. Estimated Funding ($):

* a. Federal	100,000
* b. Applicant	61,299
* c. State	
* d. Local	
* e. Other	
* f. Program Income	
* g. TOTAL	161.299

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.) Applicant Federal Debt Delinquency Explanation**

☐ Yes ☒ No

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☑ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name: Robert

Middle Name:

* Last Name: Snyder

Suffix:

* Title: President

* Telephone Number: 207.594.9209 Ext. 142 Fax Number: 207.594.9314

* Email: rsnyder@islandinstitute.org

* Signature of Authorized Representative: * Date Signed: 6/20/14

Application for Federal Assistance SF-424

*** Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Energy for US	66.951	$	$	$ 100,000.00	$ 61,299.00	$ 161,299.00
2.						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 100,000.00	$ 61,299.00	$ 161,299.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) EPA	(2) Match	(3)	(4)	(5)
a. Personnel	$ 37,930.00	$ 38,035.00	$	$	$ 75,965.00
b. Fringe Benefits	7,594.00	7,614.00			15,208.00
c. Travel	4,500.00				4,500.00
d. Equipment					0.00
e. Supplies	3,149.00	3,650.00			6,799.00
f. Contractual	3,500.00				3,500.00
g. Construction					0.00
h. Other	25,000.00	12,000.00			37,000.00
i. Total Direct Charges *(sum of 6a-6h)*	81,673.00	61,299.00	0.00	0.00	142,972.00
j. Indirect Charges	18,327.00	0.00			18,327.00
k. TOTALS *(sum of 6i and 6j)*	$ 100,000.00	$ 61,299.00	$ 0.00	$ 0.00	$ 161,299.00
7. Program Income	$	$	$	$	$ 0.00

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Standard Form 424A (Rev. 7-97)
Prescribed by OMB Circular A-102

Previous Edition Usable

PROJECT SUMMARY

The Island Institute respectfully requests $100,000 for *Energy for US*, a 2-year environmental education project which will inspire and support six inter-generational energy action teams to drive positive change in their communities, saving money and reducing climate change pollution while developing and disseminating this replicable model to organizations and interested communities nationwide. *Energy for US* will be led by a multidisciplinary team of education, technology, and energy professionals at the Island Institute. This project will utilize staff expertise and lessons learned from our in-school Energy for ME project and our community Weatherization Week program, modifying and expanding on activities to create a replicable model of out-of-school intergenerational energy teams creating energy-saving initiatives in their communities. Most importantly, the project will be a partnership with community members who are capable of creating substantial, lasting, and quantifiable positive environmental change in their communities.

ORGANIZATION AND PARTNERSHIPS: The Island Institute is a 30-year-old non-profit that works to sustain Maine's island and remote coastal communities and exchange ideas and information to further the sustainability of communities in Maine and elsewhere. We work across six program areas: education, marine resources, community energy, community development, economic development, and media, with all programming focusing on strategic priorities informed by broad community input.

SUMMARY: *Energy for US* will establish and support community energy teams, providing them with high quality, user-friendly energy action guides, energy investigation tools, and mini-grants to empower them to promote and measure energy-saving behavior changes and investments, and quantify savings in dollars, kilowatt hours and pounds saved of greenhouse gas emissions. We will develop and disseminate a replicable model including energy action guides, inexpensive toolkits and the practical lessons learned from this project, so that community groups anywhere in the United States can create their own energy saving initiatives. The project goals are to:

1. Empower non-hierarchical, multi-generational community energy teams to change behaviors by increasing community awareness, stewardship and action in energy efficiency and renewable energy.
2. Define strategies for communities to achieve measurable reductions of energy consumption, money and greenhouse gas emissions; and for community energy groups to measure and document these reductions.
3. Develop and test a replicable model for a *"K through Gray"* place-based informal after-school environmental education program resulting in increased energy literacy and environmental stewardship behaviors in all participants, and student self-efficacy in environmental action, that can be picked up by any after-school group, in any community in America.

Energy for US meets EPA's definition of **environmental education**, by increasing knowledge of the consequences of fossil fuel-based energy use, and empowering participants to investigate energy consumption, using data to make informed recommendations and take responsible environmental actions, resulting in decreased greenhouse gas emissions. Teams will solve real-world problems in their local communities, using payback period calculations to evaluate options, and recommend responsible actions to influence both environmental behavior changes in their communities and system upgrades and retrofits. *Energy for US's* multigenerational participants will show age-appropriate gains in environmental and energy literacies, reduce waste in electricity and heating fuel use, and implement clean energy projects. Energy teams will realize and quantify reductions in pounds of greenhouse gases emitted, directly addressing climate change and increasing the efficiency and comfort of homes, schools and community buildings. There is the potential for substantial energy savings – 10 Maine communities participating in the Energy for ME school program have saved over $85,000, 640,000 kWh and the equivalent greenhouse gas emissions as planting 300 trees, while 200 homeowners in six communities will see annual savings of $70,000 thanks to our Weatherization Week program. We conservatively estimate that *Energy for US* will result in savings of $54,000, 58,000 kWh and 10,000 gallons of heating fuel, accounting for the equivalent of 150 trees planted.

IMPLEMENTATION / DELIVERY METHOD: Island Institute staff will leverage established

relationships with schools, electric utilities, energy committees and industry professionals to foster diverse representation on community energy teams. Energy action guides will provide teams with background information and instructions for developing energy-saving strategies on topics such as *Energy 101, Lighting* and *Renewables.* These multi-media guides will also include concise instructional videos. The guides will be developed to ensure relevance and usability in any community and climate so that the effort put into *Energy for US* will reap benefits beyond Maine. Teams will receive low-cost, hands-on energy toolkits (including light meters, Kill-A-Watt meters, and more, as well as access to more expensive equipment on loan such as the Institute's blower door kit, infrared camera and solar pathfinder). With these tools, they will undertake authentic investigations, and develop data-driven recommendations for actions that would reduce electricity and energy waste. Island Institute staff will provide each team with a hands-on orientation workshop in their community; help teams to identify viable projects; and ensure they have the training, references, and connections to available public and private resources to effect change in their communities. The Island Institute will apply its experience networking geographically isolated communities through synchronous and asynchronous modes of communication to lead this project. Energy teams will learn from each other, share questions and ideas through the *Energy for US* blog and monthly videoconference meetings, and will attend the annual Island Energy Conference.

AUDIENCE: We will work directly with six Maine island communities to pilot and evaluate this model, bringing educational and environmental benefit to some of the nation's most geographically isolated communities with some of the highest energy costs and carbon-dense energy sources. Our multigenerational model will reach elementary, middle and high school students, their parents and teachers, school facility staff, town officials, town energy committee members, and utility staff and ratepayers, with a **direct estimated reach of at least 45 individuals**, and an ***indirect impact on at least 12 community organizations, and the 2,250 individuals who reside in these communities.***

COSTS: *Energy for US* respectfully requests $100,000 to support direct program expenses for energy toolkits, participant supplies, staff travel to participating communities, dissemination of the *Energy for US* energy action guides and toolkit, and staff time for all program elements. Twenty-five percent of EPA funds ($25,000) will provide mini-grants to *Energy for US* teams as sub-awards to fund non-construction projects that meet an environmental and educational goal, relating to community energy and environmental action.

PROJECT DESCRIPTION

WHAT: The Island Institute has nurtured its educational model throughout nine years of environmental STEM education projects (CREST, NSF #0525118, 0737588; 2005-2010; Energy for ME, NSF#1029696 2010-present and EPA grant #NE83484301, 2010-2011; STORMS, NSF# 1034857, 10/1/2011 - 9/30/2012; and WeatherBlur, NSF#1023005, 7/1/12 to 6/30/14). This model takes a non-hierarchical approach to technology-infused, place-based environmental education, and the underlying belief that students and community members are capable of creating substantial, lasting, and quantifiable positive environmental change in their communities. The Island Institute's vision for *Energy for US* solidly aligns with EPA's third **educational priority: *community projects***. *Energy for US* teams will work collaboratively to increase their own environmental and energy literacies through direct action rooted in place, in service of their communities.

Energy for US promotes interdisciplinary learning that is rooted in the local community to accomplish tasks with academic- *and* civic-engagement goals, while also providing K-through-Gray learners with the confidence to believe that they can effect positive change in their communities (Gruenewald & Smith, 2008; Smith & Sobel, 2010; Sobel, 2005). *Energy for US* will provide training for participants of all ages to become facilitative leaders with a discrete set of core skills, emphasized during the orientations and trainings, which will assist participants in becoming effective resource stewards. By embedding *facilitative leadership* into all project activities, *Energy for US* will provide essential competencies (e.g., consensus building, conflict resolution, role clarification, self-critique) that students and adults can deploy in order to facilitate discussions that allow ideas to develop into action. Stoops

(1994) reported that projects utilizing these skills "develop a strong sense of local ownership and input, improve collaboration and understanding, and increase community unity." (Stoops, 1994)

EPA's first **environmental priority, to *Address Climate Change and Improve Air Quality*** succinctly aligns with objectives in the Island Institute's strategic plan: to address climate change in our natural resource-based communities, and to increase community resiliency by lowering energy costs and reducing consumption through efficiency and renewable energy projects. Many island communities are electrified by local cooperatives that generate power from diesel fuel, giving them some of the most costly and carbon-dense electricity sources in the nation (Island Institute, 2011; U.S. EIA, 2012).

Energy for US seeks to meet the EPA's environmental and education priorities by: empowering multi-generational energy teams to increase community awareness, stewardship and action in energy efficiency and renewable energy; defining strategies for communities to achieve measurable energy reductions; and developing a replicable model for a multigenerational after-school environmental education program resulting in increased energy and environmental literacies, environmental stewardship, and students' self-efficacy for environmental action, that can be picked up by any after school group, in any community throughout America. To meet these goals, *Energy for US* will:

- Provide energy education orientation workshops for multigenerational energy teams in six communities, engaging at least 45 direct project participants
- Provide training, written and video guides and energy toolkits to each energy team containing: Kill-A-Watt meters, light meters, thermal leak detectors, and HOBO data loggers; as well as the following tools on loan: a blower door kit, infrared camera and solar pathfinder; and web-based tools including EPA's Portfolio Manager and NREL's PV Watts Calculator
- Provide sub-awarded mini-grants to energy teams to fund non-construction projects that meet an environmental and educational goal, relating to community energy and environmental action
- Provide assistance with facilitating community-wide energy projects, such as making interior storm window inserts, scheduling home energy audit assessments "bundled" by island, and securing funding and technical assistance from Efficiency Maine, the New England Grassroots Environment Fund's SEED Grants, the Energy Star program, Portfolio Manager and Battle of the Buildings competition
- Network and share strategies among communities teams via a project blog and videoconferences
- Evaluate student and adult outcomes in energy and environmental literacies, environmental stewardship behaviors, and student self-efficacy for environmental action
- Provide free tuition for three energy team members from each community to attend and share lessons learned at our annual Island Energy Conference
- Package and disseminate materials and make accessible online, free of charge
- Utilize our national environmental and energy networks to disseminate to other nonprofits and educational organizations though webinar trainings and conference presentations

WHY: *Energy Costs:* The New England region pays some of the highest electric rates in the nation, with some island communities paying up to $0.70/kWh, seven times the national average. There are a variety of energy generation methods employed on islands, but among the most costly, polluting, and least efficient are the diesel generator-powered systems on Monhegan and Matinicus. Most homes in New England, including the islands, depend heavily on costly and polluting home heating oil, and have some of the oldest housing stock in the country (U.S. EIA, 2012). The resultant stress on household budgets disproportionately impacts senior Americans which make up a significant proportion of the region's population (US Census Bureau, 2012). At the same time, these challenges make Maine ripe for innovation and action when it comes to energy awareness and behavior change, energy efficiency and renewable energy initiatives. For example, Efficiency Maine, in conjunction with the Island Institute, has received national recognition for its new residential weatherization program, and, in turn, Efficiency Maine awarded statewide recognition to the Island Institute for our community-based Weatherization Week model. Through subsidizing the extra costs of energy audit assessments, island homeowners qualify for Efficiency Maine's weatherization incentives. The University of Maine is also leading the country in the development of floating offshore wind energy technology near Monhegan Island. These projects

create an environment in which students and adults are keen to learn and make a difference and *Energy for US* will provide the opportunity for students and adults in Maine communities, and communities throughout the country, to tackle their local energy challenges.

Knowledge Gap: Energy consumers throughout the region understand little about the technical aspects of energy systems. Through our recent programming supporting the employees of electric utilities and building maintenance staff, we have uncovered a knowledge gap in basic understanding of energy concepts, such as the difference between kilowatt and kilowatt-hour. In small, remote communities, adult volunteers and stewards are often put into positions where they lack expertise, such as managing an electric cooperative or managing building facilities. The adage states, *you can't manage what you can't measure.* Taking this logic a step further, we also believe that *you can't measure what you don't understand. Energy for US* seeks to increase energy literacy in all participants, making action on energy issues more accessible and opening the door to community-wide energy savings.

Climate Change: The impacts of climate change are visible in the Gulf of Maine, creating great concern for coastal natural resource-based communities. Future projections of physical and chemical impacts of climate changes for this region include warmer air and ocean temperatures (Mills et al., 2013), higher sea levels (Gehrels et al., 2002), and ocean acidification (Wang et al., 2013). This combination of factors could lead to major changes in coastal fisheries of New England, strongly impacting the region's fishery-dependent communities. *Energy for US* seeks to address the challenge of climate change by giving community energy teams the knowledge and skills to take responsible action to decrease the use of carbon dense energy sources. Island communities that rely solely on diesel generators for electricity produce over 2.5 times more carbon dioxide per kilowatt-hour than their mainland counterparts (Clayton & BlueSky.org, 2012; Welch & Littell, 2012), therefore energy education programs, like *Energy for US,* will have even greater impacts on carbon emissions in these communities.

HOW: ***Goal 1).*** *Empower non-hierarchical, multi-generational energy teams to increase community awareness, stewardship and action in energy efficiency and renewable energy*

The Island Institute will leverage existing relationships with island schools, community energy committees, utility staff and board members, community leaders, business leaders, and homeowners to ensure participation in this project by a broad age-range of island residents. After nearly a decade of delivering high quality place-based environmental education, the Island Institute's successful professional development model ensures that participants gain the skills and expertise needed to implement a project, and leave with goals and an achievable action plan. Teams will apply for mini-grants for non-construction projects, and community energy outreach and action materials will help promote the changes they identify in their communities. Our project staff will connect teams with our extended, well-established network of energy professionals, to help to make larger projects a reality for homeowners motivated to make further energy investments. Stories and accomplishments will be shared with other teams through regular videoconferences, on the *Energy for US* blog, and at the annual Island Energy Conference.

ENERGY ACTION GUIDES: Island Institute staff will develop energy action learning guides in the first quarter of the funding period. Components of school-based Energy for ME curriculum will be repurposed for *Energy for US,* along with development of new materials, and utilization of outside materials where appropriate. Five energy action guides will be created: *Energy 101, building envelope, lighting, plug-loads* and *renewables.* Guides will be framed with the progression of: knowledge and literacy building, skill building, and responsible energy action. The inclusion of videos and infographics with guides will enable participants to learn the material without direct instruction. *Energy 101* will focus on the units of energy, such as watt, kilowatt, kilowatt-hour and BTU. Guides on *building envelope, lighting* and *plug-loads* will begin with background on the topic, include directions for how to use the related tool (thermal leak detector, HOBO data logger, light meter, Kill-A-Watt meter, respectively), and the steps for conducting an energy investigation: collecting data, analyzing data, sharing results for responsible action. Each building-related guide will include materials for behavior change campaigns, such as a campaign to have library users turn off lights, and systems and equipment changes, such as sharing the benefit of motion sensors and recommending that the library invest in one. The *renewable*

energy module will cover renewable resource assessment and feasibility studies, connecting teams to programs like the National Renewable Energy Laboratory's PV Watts Calculator.

ORIENTATION WORKSHOPS: Island Institute staff will organize and facilitate orientation workshops on each of the six island communities participating in *Energy for US*. Findings from past orientations using a similar model shows that this learning model consistently generates statistically significant learning outcomes for both students and teachers. Statistically significant learning gains include increases in 1) *energy literacy* (20% increase, $p<.001$); 2) *pro-environmental behavior* (10% increase, $p<.001$); 3) and *environmental awareness* (20% increase, $p<.001$) of how electricity use affects their home, school, community, the state of ME, and the global climate (Peterman & Robertson, 2013). Leveraging relationships with island schools, town governments and electric utilities, we will recruit interested parties to the workshops. With a non-hierarchical, hands-on and place-based approach, participants will be led through activities to increase their energy literacy, energy investigation skills, and formulate an energy action plan for their community.

Energy teams will leave workshops with an understanding of key units of applied energy, an understanding of how buildings consume and waste energy through the building envelope, heating and cooling, lighting and plug-loads, as well as a familiarity with viable alternative energy sources for heating and electricity. The material will not be delivered via a traditional classroom approach. Concepts will be taught with applied teaching strategies that integrate community nuances and resources, an approach that provides an engaging learning experience. Participants will have time to experiment with the toolkits, enabling users of all ages to identify opportunities for both behavior and system changes. Teams will have resources and materials about environmental behavior change initiatives built upon community-based social marketing theories (McKenzie-Mohr, 2000). The potential for systems changes will be discussed in relation to the three building-related topics (lighting, plug load and building envelope), including simple actions that energy teams can take, such as making Do-It-Yourself temporary interior storm window inserts, and calculating payback periods for larger investments in energy efficiency. For example, the Kill-A-Watt meter monitors electricity used by a plug load, such as a refrigerator. The data collected from a refrigerator can be used to extrapolate annual energy costs and greenhouse gas emissions, and with this data, a payback period can be calculated to help a homeowner decide whether to upgrade to a more efficient Energy Star model. Alternatively, the HOBO data logger can be programmed to record light levels over time. Users can easily analyze the data to determine whether building lights are turned off when unoccupied, or if a campaign is needed to encourage this behavior.

Through team building exercises, brainstorming and community resource mapping, we will facilitate development of energy action plans by each team, including actions for increasing community awareness and behavior changes, and plans for investigating potential system changes. Teams will brainstorm how mini-grants and the Island Institute's community energy outreach and action will help them reach their goals. One team leader, who will receive a stipend, will be selected to take responsibility for team meeting logistics and being the primary liaison between the Island Institute and the team.

ENERGY TEAM NETWORKING: To connect energy teams, the *Energy for US Blog* will host stories of success and challenges, enabling teams to learn from each other. Island Institute staff will build, maintain and help users access the blog. Regular videoconference check-ins will include troubleshooting, question and brainstorming time, and a rotating monthly topic for content delivery; such as getting started on lighting investigations, or designing effective signage for your community project.

Goal 2). *Define strategies for communities to achieve measurable reductions of energy consumption, money and greenhouse gas emissions; and for community energy groups to measure and document these reductions.*

Energy teams apply the knowledge and skills gained from the orientation workshop and guides to investigate energy used by buildings in their community. The place-based nature of this program means that this will look different in each community. Energy teams on islands with higher populations of seniors with fixed incomes may prioritize services to them. Regardless of the focus, each team will work to increase awareness of energy use in their communities through direct (e.g., speaking to homeowners,

town meeting) and indirect communications (e.g., newsletters, newspapers, posters). Each team will focus on behavior change and the potential for system change strategies, and some teams may undertake renewable energy projects with additional input. Teams will develop methods of reporting on the energy-saving actions implemented as a result of their efforts. Two core components of *Energy for US* will help facilitate the action: community energy outreach and action materials, and mini-grants.

COMMUNITY ENERGY OUTREACH AND ACTION: The Island Institute has developed an award-winning, community-based model that removes barriers for island residents to leverage public incentives for home weatherization audits and insulation work, and teaches islanders how to make simple energy-saving removable interior storm window inserts. Our *Weatherization Week* model reduces the cost of energy assessments to the homeowner by achieving economies of scale coordinating energy auditor travel, lodging and assessment work for multiple scheduled home audits, and opens the door for homeowners to take the next step, leveraging weatherization incentives from Efficiency Maine.

Removable interior storm window inserts are an easy do-it-yourself, energy saving project for people of all ages. The windows are assembled from pre-cut 1" X 2" wood, plastic shrink film, double-sided tape and foam weather-stripping, and snuggly fit inside a window frame, increasing the insulation value, resulting in approximately 10% reduction in building heat loss. The inserts are simply pulled out at the end of the heating season, and stored until the next winter - lasting as long as 10 years. Each of our Weatherization Weeks and window workshops have resulted in increased interest in energy issues both at home and in the community. As homeowners realize significant savings from simple, do-it-yourself projects, they are motivated to pursue additional projects. For example, after programming on Peaks Island, a group of fifty residents has teamed up to bulk-purchase efficient air-source heat pumps.

Through the *Energy for US* program, energy teams will serve as the "feet on the street" in island communities, helping educate islanders about the resources available to save energy. To date, the Island Institute's Weatherization Week model has facilitated homeowner retrofits in over 200 homes, saving homeowners over $70,000 per year in heating costs, and has helped to make over 200 window inserts. In 2013, Efficiency Maine awarded the Island Institute *Customer of the Year* for our success in bringing energy efficiency programs to Maine's islands. *Energy for US* will expand this model to every participating community, incorporating an educational approach to energy outreach. Expansion of this innovative programming contributes the non-federal match (see budget for details), including in-kind salary time, direct expenses in home energy assessment subsidies and window-making supplies.

ENERGY FOR US, VIGNETTE: The work of energy teams will be driven by local need and circumstance, so that the implementation will vary in each community. For example, on Vinalhaven, two groups, the Vinalhaven Adult Energy Club (retired island residents) and the after school E4V (Energy for Vinalhaven club of middle & high schoolers), might focus on heating in the Vinalhaven Eldercare facility. After training from the orientation workshop, and reviewing the energy action guide on building envelope, the team might program a HOBO data logger to record indoor temperature and relative humidity, and use the thermal leak detector to record temperature of exterior walls and windows. If they find cold exterior walls and windows, and a fluctuating indoor temperature resulting from the furnace kicking on every 10 minutes on cold days, they would take a closer look at where heat loss is occurring, by borrowing the Island Institute's infrared camera to do a comprehensive scan of the building. If the windows are a major source of wasted energy, they can plan to build interior storm window insets for the facility. They can apply for a mini grant from *Energy for US* to organize a community-wide window making workshop and recruit volunteers to help spread awareness about this simple yet effective step toward energy efficiency.

MEASURING ENERGY REDUCTIONS: Energy teams take attendance at all events, and encourage participants to report back on energy-saving actions. The stipended energy team leader will be responsible to report to the Island Institute on pre-post measures for electricity or heat loss projects. During our recent Weatherization Weeks, we have had cooperation with auditors and homeowners, who enthusiastically shared their pre- and post-insulation heat loss data. This information will be reported to EPA, and used to inspire others to pursue responsible, energy-saving actions.

Goal 3). Develop and test a replicable model for a multigenerational place-based informal after-school environmental education program resulting in increased energy & environmental literacies, environmental stewardship behaviors in all participants, and student self-efficacy for environmental action that can be used by any after school group, in any community in America.

Regardless of where one resides in the U.S., there are economic and environmental consequences to powering, heating and cooling our nation's buildings. This project is focused on a small area, islands on the coast of Maine, where energy is a major concern to the resiliency of these communities. However, the program sees these communities as a microcosm of relevance to the rest of the nation; its model, toolkits and learning guides will be applicable beyond our islands, benefiting from these incubators for an innovative, community-based, multigenerational approach to energy education and action.

The program will be packaged into tightly organized energy action guides, with equipment lists and video tutorials that will enable users new to this program to implement the strategies without direct instruction. Island Institute will disseminate the program model and components widely among the environmental and educational communities and networks. In addition to alerting others to the availability of the program components for download, we will host at least two webinars to train non-profits, community organizers, teachers and others in how to facilitate a process like *Energy for US* in their own community or region. Island Institute staff have experience delivering informational webinars, and will advertise the webinars through the following networks, of which we are members: Climate Literacy & Energy Awareness Network (CLEAN), North American Association for Environmental Education (NAAEE), New England Environmental Education Association (NEEEA), New England Local Energy Network (NELEN), Maine Environmental Education Association (MEEA), National Network of Ocean and Climate Change Interpreters (NNOCCI), New England Ocean Action Network, Maine Climate Change Adaptation Network, and through our relationships with staff at NOAA, NSF, DOE and EPA. We will also present *Energy for US* at NAAEE in fall 2015 and at NSTA in spring of 2016.

WHO: *Energy for US* will foster the formation of energy teams on six of Maine's thirteen unbridged islands that have schools: Monhegan, Matinicus, Frenchboro, North Haven, Vinalhaven, Peaks, Isle au Haut, Chebeague, Long, Cliff, Islesford, Islesboro, and Swans Islands. We will develop an application process to select six communities to focus on, modeling on application processes we have used in other programing. We will recruit for energy teams from 30-years of relationships with students, parents, grandparents, electricity cooperative employees, town officials and interested community members – creating truly non-hierarchical, multi-generational teams. We anticipate a core of 45 individuals actively involved on energy teams, with approximately 2,250 individuals indirectly impacted by the behavior change campaigns and energy saving projects initiated by energy teams. Many letters of commitment from islanders, including teachers, school administrators, community organizers and utility managers, accompany this proposal.

Maine's islands are ready for this project, with some of the oldest housing stock and most carbon-dense electricity sources in the nation. Island communities across the globe are feeling some of the greatest impacts of climate change, through sea-level rise, increased storms and severe weather events, and changes to marine environments on which they are dependent for livelihoods. This, coupled with the high costs of energy on islands, creates strong motivation in the areas of energy and environmental action. Islands serve well as incubators for pilot projects, as their stable populations, communication networks and geographical boundaries allow for facilitated roll-outs, immediate feedback, relatively direct outcome measures, and high saturation levels.

SUB AWARD PROGRAM: We are excited to dedicate 25% of this funding request equaling $25,000, to a mini-grant program for *Energy for US* energy teams, to fund projects that meet an environmental and educational goal, relating to community energy and environmental action. Mini-grants will enable energy teams to implement behavior change campaigns, facilitate field trips to renewable energy installations, attend conferences, purchase additional energy investigation equipment, and fund energy assessments and purchase removable interior storm window insert-making supplies. All mini-grant funded projects will be required to have an **educational component** to increase public awareness of the project or topic. We will encourage projects to incorporate signage if applicable, and all funded projects will be documented on the public *Energy*

for US blog and presented at the Island Energy Conference. Mini-grant applicants must explain the **environmental benefit** of the project, projecting energy savings and reductions in greenhouse gas emissions. Thirdly, energy team applicants must explain the **community benefit** to their proposed project, including but not limited to: how it will increase community awareness and stewardship, how it will save money for the town or homeowners involved, and how the project fits into the bigger picture of community and economic resiliency. Applications will also require a timeline and budget. Funded projects must be completed between June 2015 and December 2015. At least six mini-grants, ranging from $1,000 – $4,500, will be awarded.

The application period for mini-grants will be open in the spring of 2015. Preceding this period, staff will host a videoconference to assist energy teams in developing their proposals. While the process will be competitive, the goal is for each of the six *Energy for US* communities to receive at least one grant, with the possibility of some communities receiving more. A committee of energy professionals will use a rubric based on: cost-effectiveness, ability to leverage other funding (from Efficiency Maine, for example), realistic timeline and budget, educational, environmental and community benefits.

Each mini-grant must include a project coordinator who will serve as the main point of contact. The school in each community will serve as the fiscal agent for each mini-grant awarded. The fiscal agent will not be allowed to charge any administration or indirect costs. Once awarded, teams will submit a mid-project report at three months, with the status of the project, any unexpected challenges encountered and progress towards meeting the goals of the project. Upon project completion, a final report will be due explaining how the project has met the intended goals.

EVALUATION: We will implement a multi-method evaluation to document the success of *Energy for US* at meeting its goals and objectives. Tracking data will be regularly collected by the project team and shared with the external evaluator (Dr. Karen Peterman) in order to document the progress toward achieving each output. Each of the following components will be tracked: the number of energy action guides created and distributed, the number of energy team members in each community over time, the number of orientation workshops hosted and attendance at each, the number of mini grants awarded, posts to the blog, and the dissemination of results. In addition, the impact of the project on each community's energy use will be reported by energy teams, tracked by staff, and aggregated to demonstrate the impact of *Energy for US* on the amount of money saved and the amount of greenhouse emissions reduced through the implementation of *Energy for US* conservation efforts. Energy savings will be used to document success in relation to Goal 2 of the project.

Outcomes data will be collected from participating community members to document the impact of the program at the individual level. These results will serve as indicators of the project's success in relation to Goals 1 and 3. Community energy team members will complete an online pre-program survey when they register to be part of the *Energy for US* project. Because we expect short-term gains in content knowledge and motivation, community members will complete a brief post content assessment at the end of the orientation workshop. Long-term data on all constructs will be collected in both June 2015 and again, as follow-on data in November 2015. The content assessment from our current Energy for ME evaluation will be expanded to measure participants' knowledge of *Energy for US* concepts. Specifically, the content assessment will include new questions to measure both environmental and energy literacy.

The DEVISE scales, developed and validated by the Cornell Lab of Ornithology, will be used to document the affective outcomes associated with *Energy for US* (Phillips et. al, in prep). Though originally developed for citizen science projects, the constructs measured by several DEVISE scales are an ideal fit for environmental place-based education projects. Four scales will be used including: the Motivation for Environmental Action, which will be administered at the end of the workshop to measure change related to this short-term outcome; as well as The Self-Efficacy for Environmental Action, General Environmental Stewardship, and Behavioral Intention Scales which will be used to measure medium-term outcomes. The DEVISE team recognizes the value of the scales, both within and beyond the context of citizen science and has granted Dr. Peterman permission to use them as part of the *Energy for US* evaluation.

Activities	Fiscal Year 2014 - 2015												Fiscal Year 2015 - 2016											
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Learning module development																								
Energy team recruitment																								
Pre-evaluation																								
On-site orientation workshops																								
Monthly virtual check-ins																								
Energy teams actively meeting & working																								
Mini-grant open application period																								
Mini-grants awarded																								
Mini-grant projects ongoing																								
Community Energy outreach & education																								
Post-evaluation																								
Dissemination preparation																								
Dissemination webinars																								

Energy for US Performance Measures — Logic Model

Outputs	Outcomes		
	Short-term	Medium-term	Long-term
Recruitment of K — Gray energy teams in each community	Diverse energy teams are formed, five —eight individuals in six communities	Energy teams create educational energy saving projects to promote behavior change and efficiency measures in their community, saving energy, money and reducing climate change pollution • at least 6 community buildings investigated • at least 125 individuals directly or indirectly benefit from energy teams efforts	Benefits of additional energy and money savings and reductions in climate change pollution, achieved through sustained and increased behavior change and efficiency resulting from increased community awareness
Orientation workshops, held in each community	Energy and environmental literacies increase (anticipated 25% initial gains in content knowledge in pre-post workshop evaluation), as well as increases in the capacity level of energy teams to create lasting environmental benefit in communities		
Energy action guides: 5 guides will be developed; energy 101, building envelope, lighting, plug-loads & renewables, including written material, infographics and video tutorials	All members of energy teams receive energy action guides, increasing energy and environmental literacies, environmental stewardship behaviors, and self-efficacy for environmental action for all participants		
Videoconferences	5 video conferences will be hosted each year, offering the opportunity for energy teams to network and share with teams in other communities, receive program and state resource updates and mini-grant guidance	Teams will benefit from lessons learned by other teams, be able to take advantage of mini-grants, community energy outreach & action, and state resources and incentives	Lessons learned and FAQ obtained through videoconferences contribute to best practices and refinement of energy action guides
Island Energy Conference Energy teams participate in workshops, networking with utility staff and volunteer energy committees from islands across New England, and energy industry professionals	Energy team members: • gain exposure to ideas and lessons learned from energy action projects in other communities • establish contact with people and organizations who can serve as resources for their local energy action activities	Energy teams are able to leverage resources from an extended network, adding value to their community energy action and education efforts	Community energy action teams share ideas and lessons learned, pool resources, reduce redundancy and ultimately achieve greater energy savings and efficiency

Energy for US Performance Measures — Logic Model

Outputs	Outcomes		
	Short-term	Medium-term	Long-term
Energy investigations: teams use toolkits and energy guides to investigate community need and opportunities for energy savings	Teams identify the low hanging fruit for energy savings in community buildings, and homes of the elderly and disadvantaged. Increased motivation of participants to take action to increase energy efficiency as a whole community.	Projects save energy, money and reduce greenhouse gas emissions, creating local and global benefit; projects increase community awareness of the importance and methods of saving energy	Additional savings of energy, money and reductions in climate change pollution are achieved through sustained and increased behavior change and efficiency resulting from increased community awareness, including • long term anticipated savings of $700,000, 65,000 kWh, 120,000 gallons heating fuel, and • equivalent carbon reduction of planting 1,750 trees
Energy for US Mini grants: 6+ grants of $500 - $4,000 are awarded to 6 project teams to support their energy action projects, with $25,000 directed to fund qualifying projects	6 Energy teams complete projects. 100% of projects meet an educational & environmental goal identified by the team as an achievable way to address a high-priority community energy need.		
Project implementation in communities: teams use mini-grants and other resources (state energy incentives, etc.) to implement energy savings projects	Energy team projects result in: • savings of energy, money and greenhouse gas pollution benefits tax payers and/or disadvantaged and elderly homeowners • anticipated savings across communities: $120,000, 130,000 kWh, 23,000 gal heating fuel, the equivalent climate change impact of planning 200 trees		
Community Energy Outreach & Action (window workshops & home energy audits)	Energy team and additional community members receiving outreach learn DIY energy saving measures and gain intelligence on how homes are wasting energy (145+ interior storm window inserts, energy audit assessments of 45+ homes)	Homes with interior storm window inserts achieve 10% thermal energy savings, 90% of audited homes choose to leverage state weatherization incentives, saving additional thermal energy, money and reducing climate change pollution	Savings of energy, money and reductions in climate change pollution are sustained and many homeowners take additional energy efficiency measures, adding to monetary and environmental savings
Energy for US blog: 30 contributors share successful strategies for making energy teams work in communities	At least 100 followers are exposed to ideas and lessons learned from energy activities in other communities, informing their planning for energy action in their own communities	Replicability of the model - the blog will document project activities and serve as a jumping off point for new communities interested in replicating the project model	*Energy for US* will be implemented widely in many different communities across the country using the project documentation

Energy for US Performance Measures – Logic Model

Outputs	Outcomes		
	Short-term	Medium-term	Long-term
Evaluation: • The baseline establishes participants content knowledge, awareness and self-efficacy • Project team implement additional tutorials during videoconferences & while on island to address knowledge gaps • Post evaluation analyzed • Evaluation report completed	Statistically significant pre-post gains in energy & environmental literacies, environmental stewardship, self-efficacy for environmental action are analyzed and used in final refinement of model and materials	Dissemination of evidence-based replicable model for effective environmental and energy action teams contributes to field of environmental education, informing practice nationally	In 5 -10 years, we anticipate *Energy for US* like teams operating in more than 500 communities across the nation
Presentations at NSTA, NAAEE	Participants (approximately 60) learn about *Energy for US* and where to access the program materials to replicate the Energy for US model	Community organizations and motivated individuals utilize the model and materials to implement *Energy for US –like* programs in their communities or regions	500 anticipated new energy teams will emerge nationally, creating lasting environmental and educational benefit – saving energy, money and reducing climate change pollution on a large scale
Dissemination webinars	At least 60 participants from at least ten distinct organizations will participate in webinar trainings on how to establish energy teams to replicate the Energy for US project model		

Programmatic Capability and Past Performance — Island Institute

i. **Past performance in successfully implementing and completing grants**

The Island Institute was awarded EPA grant #NE83484301 in 2011 which provided initial funding for the classroom-based Energy for ME program (also funded by NSF#1029696). In 2012 we launched a community energy efficiency program focused on weatherization, which has supported Over 200 homeowners in 6 communities to date. Our Weatherization project organizes interior storm window–building workshops on islands and facilitates energy audits, clearly demonstrating that by working with neighborhood groups to educate homeowners about immediate financial and other benefits of insulating their homes we have changed homeowner behavior, overcoming reluctance to allow a home energy audit and mitigating their fear of potentially disruptive and expensive home retrofits. Best practices and lessons learned from Energy for ME and from our island weatherization project have led to development of *Energy for US*, a new, broadly replicable model of informal energy education and action in a multi-generational setting. Where Energy for ME lived in the classroom, implemented by grades 6-12 teachers and focused on high-resolution electricity monitoring technology, *Energy for US* will consist of groups of community members, from kindergarten age to senior citizens, seeking to use a variety of data and tools to make positive changes in their communities' energy future. *Energy for US* will build on Energy for ME's successful classroom model, where the potency of immediate energy-use data sparked student interest and learning about energy and their desire to take action to conserve energy, but will operate in the community, and engage home-owners, community groups, municipal governments, and local businesses.

Ruth Kermish-Allen, Education Director at the Island Institute, has helped design and led the implementation of each of the Institute's highly successful Environmental Science, Technology, Engineering, and Math (eSTEM) projects. (Resumes for each principal staff member on this project are attached.)

Suzanne MacDonald, Community Energy Director at the Island Institute, is the Co-PI of Energy for ME, and has been instrumental in developing methodologies for engaging school-age children in understanding energy science concepts, recognizing appropriate and excessive energy use through different forms of energy-use data, and applying energy-savings tips and techniques for sharing and promoting with adults.

Rachel Thompson, Education Manager at the Island Institute, currently coordinates the Energy for ME and WeatherBlur projects, and will serve as co-coordinator of Energy for US. Her educational background in environmental education and her practical experience in day-to-day project coordination, working at a detailed level with all participants, has well-equipped her for serving as co-coordinator for Energy for US.

Brooks Winner, Community Energy Associate, will co-coordinate Energy for US with Rachel. He has worked in close partnership with Rachel on all aspects of Energy for ME, but has proven invaluable in his knowledge of energy technology related to everything from home energy systems to large –scale energy generation.